

# A REVIEW OF REPORTED SEXUALLY TRANSMITTED INFECTIONS (STIs) IN THE UNITED STATES MILITARY, 2000-2004



JC Gaydos<sup>1</sup>, SK Tobler<sup>2</sup>, NN Jordan<sup>2</sup>, KT McKee Jr.<sup>3</sup>

1. U.S. DoD Global Emerging Infections Surveillance and Response System
2. U.S. Army Center for Health Promotion and Preventive Medicine
3. DynPort Vaccine Company

## Revised Abstract

**Objectives:** Sexually transmitted infections (STIs) have been associated with military forces from antiquity. In general, prevention and control efforts in the United States (US) military are similar to those applied in the civilian sector. Currently, the four US military services (Army, Navy, Air Force and Marine Corps) develop and implement individual STI screening and reporting policies. Our objectives were to summarize reported rates for gonorrhea (GC), chlamydia (CT), non-gonococcal urethritis (NGU) and syphilis (TP), to assess variations within and between services, and to identify pertinent service policies.

**Methods:** Cases of GC, CT, NGU and TP reported by the four services were extracted from the Defense Medical Epidemiology Database, Army Medical Surveillance Activity (AMSA), Washington, DC. Annual Calendar Year (CY) rates per 100,000 person-years (p-yrs) were calculated for the 5-year period 2000-2004 for each condition in each service. Policy documents were obtained from government web sites or service medical representatives.

**Results:** The highest rates overall were for CT, ranging from a low of 95 cases per 100,000 p-yrs reported by the Marines in CY2000 to a high of 1,528 cases per 100,000 p-yrs reported by the Army in CY2002. GC annual rates ranged from 27 (Marines, CY2000) to 433 (Army, CY2002) per 100,000 p-yrs. NGU rates per 100,000 p-yrs ranged from 2 (Air Force, CY2004) to 259 (Army, CY2000), and for TP, from less than 1 (Navy, CY2000 and Marines, CY2000 and CY2002) to 13 (Army, CY2000) per 100,000 p-yrs. Rates were generally higher in the Army but varied within and between services over the study period. Reporting requirements were not rigid (eg, laboratory confirmation was not necessary) and STI screening policies varied.

**Conclusions:** The available data did not allow for discrimination between true incidence or prevalence, inconsistencies in reporting as causes of variability

reliable picture of the extent of STIs in the US military will require standardization and enforcement of common diagnostic and reporting criteria across the services. Rates reported among active duty military members over time for: gonorrhea (GC), chlamydia (CT), non-gonococcal urethritis (NGU), and syphilis (TP).

- Compare variations in rates over time within each service and between services.
- Compare service policies and practices for STI screening.

STI surveillance.

## Background

- STI rates in U.S. military populations have historically been higher than rates in the civilian population.
- The U.S. military services (Army, Navy, Air Force, Marines) tend to follow U.S. civilian STI screening and reporting recommendations.
- Implementation of the recommendations varies by service.
- In 1999 the Armed Forces Epidemiology board, a civilian advisory board to the U.S. military, recommended chlamydia screening of all female recruits. In March 2001 the U.S. Preventive Services Task Force recommended screening of sexually active females  $\leq 25$  years of age.
- Gonorrhea and syphilis have been national reportable diseases in the U.S. for many years. Chlamydia was added in 1995.
- Gonorrhea and syphilis have long been reportable diseases in all U.S. military services. In 1998 reportable disease case definitions were standardized for all the services. Chlamydia and non-gonococcal urethritis became reportable for all services. Case definitions for reportable STIs have not changed since 1998.
- The Army Medical Surveillance Activity (AMSA) has been designated the repository of all

## Methods

- The Army Medical Surveillance Activity (AMSA) Defense Medical Epidemiology Database (DMED) was queried for the diagnoses of interest for 2000-2004.
- The query was limited to diagnoses reported through the reportable medical events system (RMES) for active duty members.
- Department of Defense, Army, Navy, Air Force, and Marine Corps policy documents relevant to STI screening and reporting were obtained from official websites and/or medical representatives.
- Personnel responsible for STI screening at recruit training sites from all services were interviewed.

## RMES Case Definitions

**Chlamydia Trachomatis, Genital** (ICD-9: 099.41)

- A clinically compatible case that is lab confirmed
- Lab confirmation (either of the following):
  - Isolation by culture
  - Antigen or nucleic acid detected in clinical specimen

**Urethritis, Non-gonococcal** (ICD-9: 099.40)

- Urethritis in the absence of demonstrated infection with common causes of sexually transmitted urethritis
- Lab confirmation (no lab evidence of cause AND one of following)

- Urethral specimen gram stain with  $\geq 5$  WBCs/oil immersion field
- First void urine with positive leukocyte esterase test
- First void urine with  $\geq 10$  WBCs/high power field

**Gonorrhea** (ICD-9: 098)

- A clinically compatible case that is lab confirmed
- Lab confirmation (any of the following):
  - Isolation of gram negative, oxidase positive diplococci
  - Antigen or nucleic acid detected in clinical specimen
  - Observation of GNID in male urethral swab

**Syphilis, Primary/Secondary** (ICD-9: 091)

- A clinically compatible case that is lab confirmed

• Lab confirmation (either of the following):

- *T. pallidum* demonstrated in clinical specimen by darkfield microscopy, direct fluorescent antibody or equivalent method
- Positive non-treponemal test (RPR/VDRL) AND

## Results

• CT and GC were the predominately reported STIs from 2000-2004. There was considerable variation by service and age, with more cases reported by the Army and most cases reported among the high risk age group less than 25 years of age. With the exception of TP, rates peaked in 2002. (Table 1)

• Many more cases of CT and GC were identified among women, particularly those under 25. (Figure 1)

• CT rates peaked for all Services in 2002, at which point rates for the highest risk group (17-24 yrs of age) exceeded those reported nationally for a similar age group (15-24 years of age); however, the most recent 2004 data indicate that rates have fallen below the national average for this age group. (Figure 2)

• GC rates were generally higher among reporting military services in 2002. Overall, rates for the high risk 17-24 age group were lower than those reported nationally among civilians 15-24 years of age. (Figure 3)

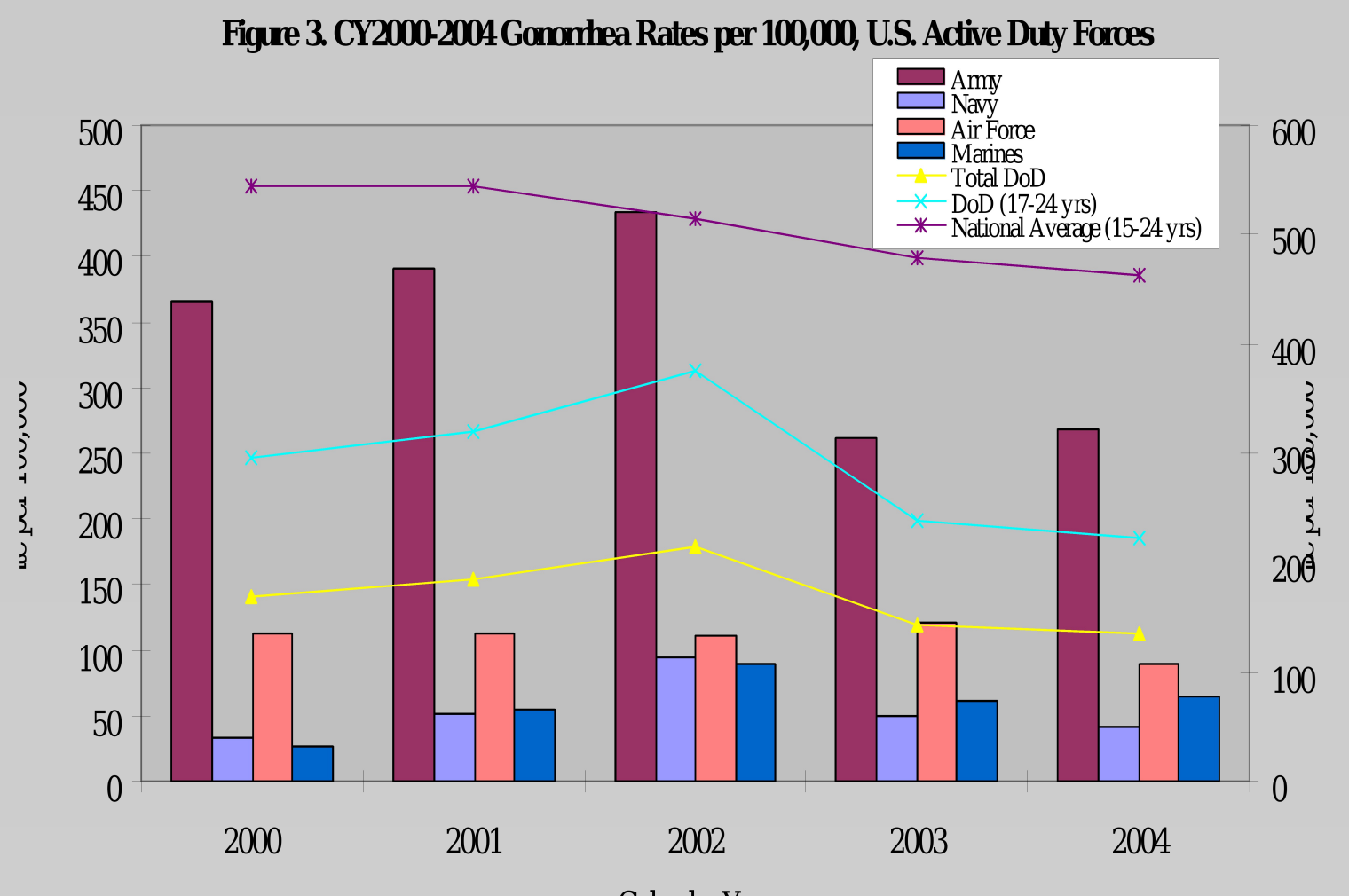
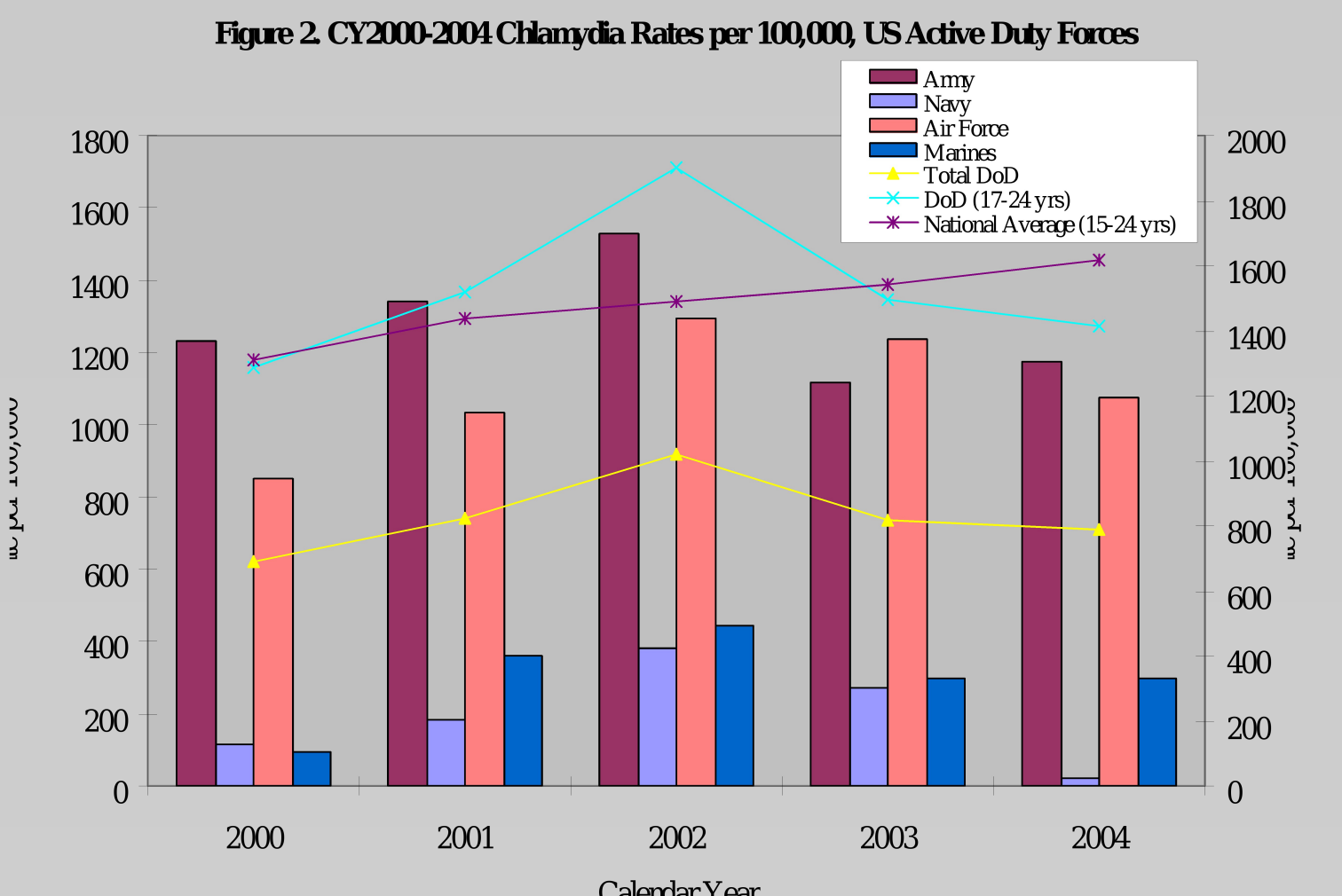
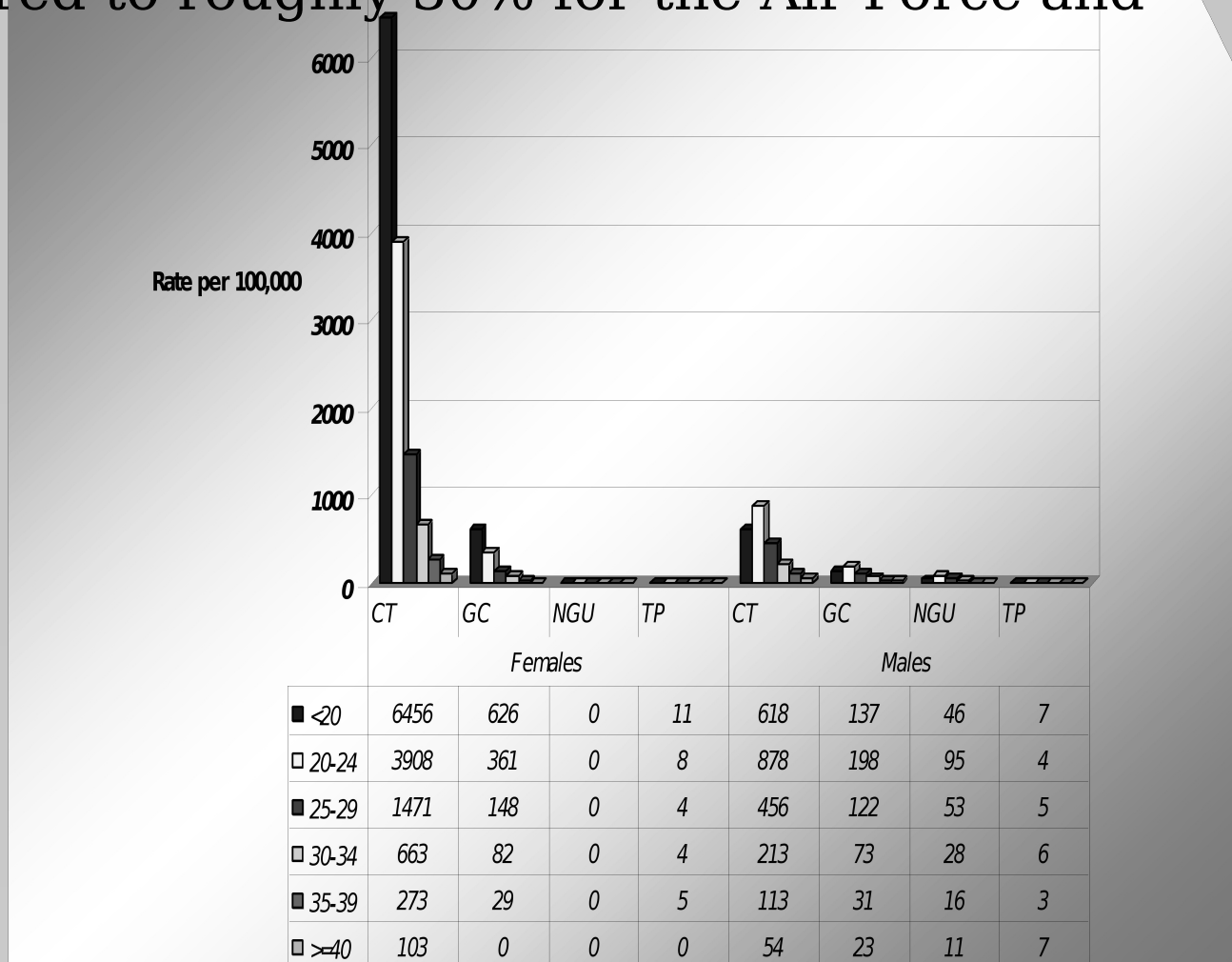
• STI screening practices vary by service, which may have contributed to the differences in rates observed (Table 2).

• STI reporting practices also vary by service, which may again affect rates reported. (Figure 4)

• Completeness of RMES reporting varies by service and the Army's estimated completeness as measured by AMSA using hospitalization records was nearly two-fold that of the other services. In 2003, completion for the Army was approximately 55% as compared to roughly 30% for the Air Force and Navy/Marine Corps. (Figure 5)

		Army	Navy	Air Force	Marines	Total DoD	DoD (17-24 yrs)	National Average (15-24 yrs)
<b>Gonorrhea</b>		366	390	433	262	268	33	51
		113	112	111	121	90	25	20
		007	55	20	62	65	169	185
		296	319	375	239	222	205	209
<b>NGU</b>		239	209	165	93	105	25	4
		13	7	6	3	2	20	12
		20	5	183	9	54	13	7
		103	76	86	35	45	157	118
<b>Syphilis (Primary &amp; Secondary)</b>		3	4	4	4	8	<1	2
		<1	2	3	2	4	0	0
		3	2	3	3	4	3	2
		157	118	128	59	31	4	4

Data source: Army Medical Surveillance Activity's, Defense Medical Epidemiology Database (DMED) query of Reportable Medical Events, Active Components, US Armed Forces



		Recruit Screening <sup>1</sup>			Yearly Screening <sup>2</sup>		
		GC	Chlamydia	Syphilis	GC	Chlamydia	Syphilis
		No	No	No	No	No	No
Army	Male	No	No	No	Yes	Females <25 years	No
	Female	No	No	No	No	No	No
Air Force	Male	No	No	No	Yes	Females <25 years	No
	Female	Yes	Yes	No	No	No	No
Navy	Male	No	No	Yes	Yes	Females <25 years	No
	Female	Yes	Yes	Yes	Yes	Females <25 years	No
Marines	Male	No	No	Yes	No	No	No
	Female	Yes	Yes	Yes	Yes	Females <25 years	No
Notes:		Chart based on phone conversations with personnel responsible for screening at recruit centers. Although the Air Force has a policy to screen all recruits, this has not been implemented. Leukocyte esterase screening of urine does occur.			Present policies call for screening for Chlamydia. However, tests that are used typically screen for GC also. Yearly preventive health screenings (PHSs) follow USPSTF recommendations. However, when physicals are performed in place of PHSs additional STI screening may occur.		

Figure 4. Reportable Events Reporting Procedures

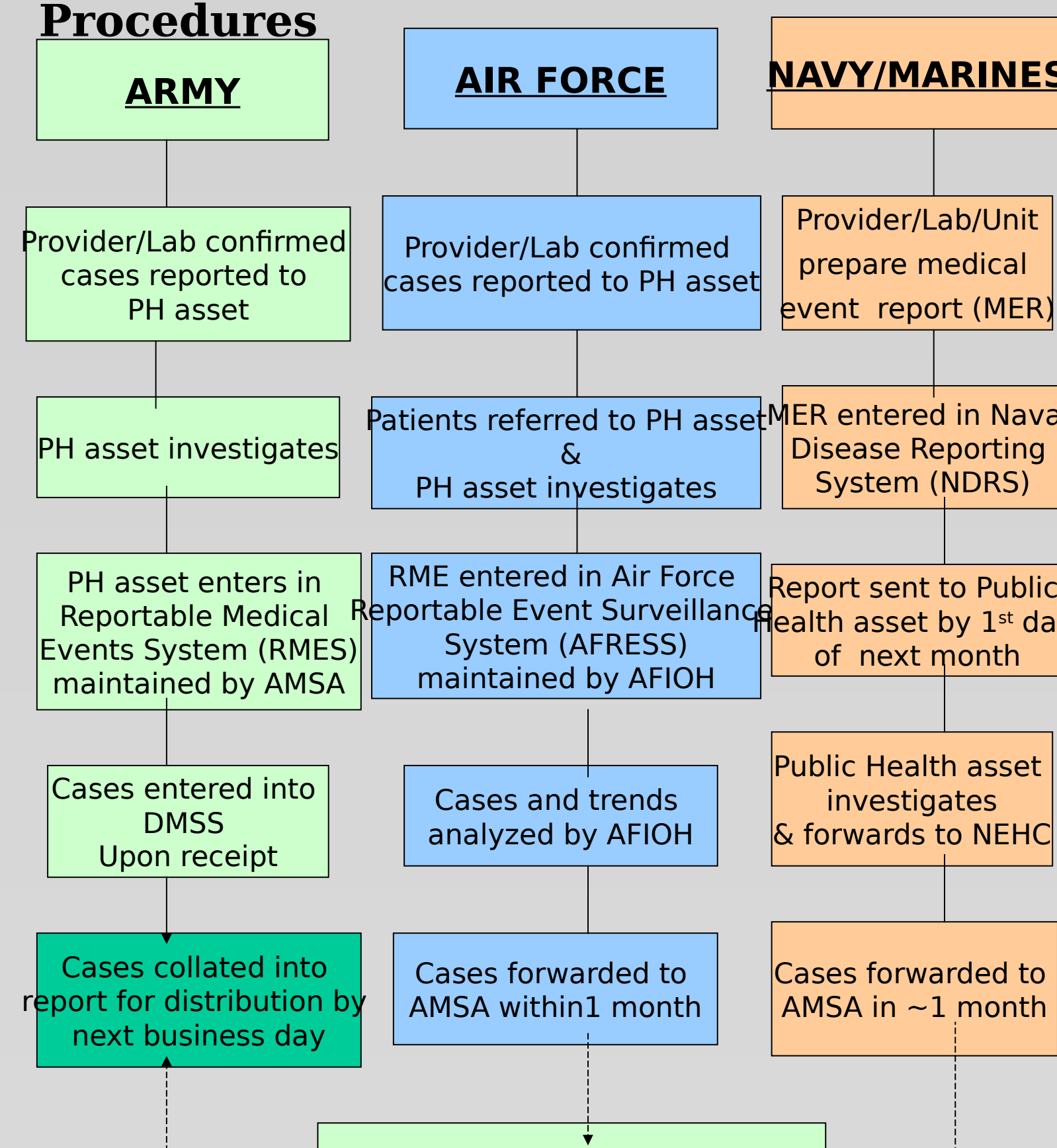
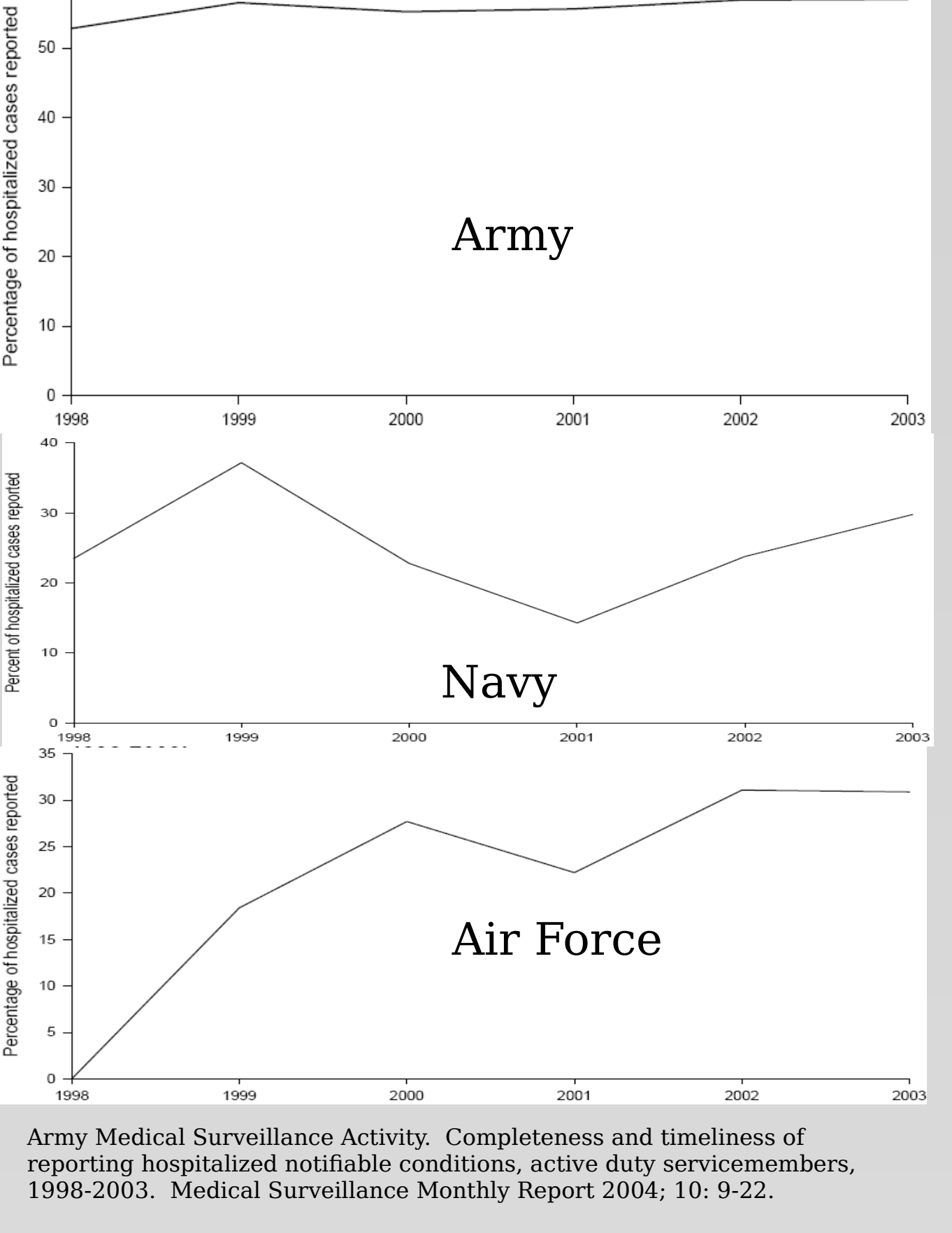


Figure 5. Reporting Completeness by Service (all hospitalized reportable events)



## Discussion

• Chlamydia and gonorrhea made up the bulk of the STIs reported through the RMES. As expected, rates were elevated among military members under 25 years of age.

• Military rates for both chlamydia and gonorrhea initially increased, then decreased over the period evaluated. During the same period, among high-risk age groups, the U.S. rates increased for chlamydia but decreased for gonorrhea.

• Reported military rates for gonorrhea and chlamydia were comparable to US population rates for a similar age group.

• Despite yearly screening for chlamydia among sexually active females, rates are relatively unchanged.

• Screening and reporting practices continue to vary by service.

• Reported rates were highest for the Army and lowest for the Navy.

## Limitations

- Variation in rates reported may be likely related to completeness of reporting.
- Reportable events systems in the military services rely on passive surveillance.
- Completeness and timeliness of reporting varies by service.

• Lab confirmed reportable diagnoses are not directly entered into reporting systems.

• STI screening policy and tests varied by service and the medical branch.

## Conclusions

- The data underestimate the true incidence of STIs in the U.S. military.
- Due to underreporting and inconsistencies in reporting it is not recommended to directly compare rates between services.
- Due to data limitations the impact of different screening policies cannot be ascertained.
- Obtaining a reliable picture of the extent of STIs in the US military will require standardization and enforcement of common diagnostic and reporting criteria across the services.
- Direct reporting of lab data into the reportable events systems would increase data capture.
- A system audit should be conducted to determine the reliability of the data and methods to improve data collection.

## References

1. Air Force Instruction 44-102, Medical Care Management, 1 May 2006.
2. Emerson LA. Sexually transmitted diseases control in the armed forces, past and present. *Military Medicine*, February 1997, 162: 87-91.
3. Air Force Instruction 48-105, Surveillance, Prevention, and Control of Diseases and Conditions of Public Health or Military Significance, 1 March 2005.
4. Air Force Instruction 48-123, Medical Examinations and Standards Volume 1-General Provisions, 5 June 2006.
5. Air Force Pamphlet 44-155, Implementing Put Prevention into Practice, 1 February 1999.
6. Air Force Pamphlet 48-133, Physical Examination Techniques, 1 June 2000.
7. Army Medical Surveillance Activity. Tri-service Reportable Events: Guidelines and Case Definitions. Version 1.0. July 1998.
8. Army Medical Surveillance Activity. Completeness and timeliness of reporting of hospitalized notifiable cases, US Army, 2000. *Medical Surveillance Monthly Report* 2001; 7(5): 5-8.
9. Bureau of Medicine and Surgery Instruction 6220.12A, Medical Events Reporting, 21 OCT 1998.
10. Bureau of Medicine and Surgery Instruction 6222.10B, Prevention and Management of Sexually Transmitted Diseases (STD), 6 AUG 2004.
11. Department of the Army Pamphlet 40-11, Preventive Medicine, 22 July 2005.
12. Department of Defense Directive 1010.10, Health Promotion and Disease/Injury Prevention, August 22, 2003.
13. Headquarters, Department of the Army. Army Regulation 40-501. Standards of Medical Fitness. 27 June 2006.
14. Manual of the U.S. Navy Medical Department, Chapter 15, Change 126, 12 AUG 2005.
15. Marine Corps Order P1700.29, Marine Corps Semper Fit Program Manual, 8 November 1999.
16. McGinnis J, Bohnker B, Malakooti M, et al. Navy and Marine Corps malaria surveillance from the Navy Disease Reporting System and the Defense Medical Epidemiology Database (1997-2000). *Military Medicine* 2004; 169: 627-30.
17. Memorandum, Armed Forces Epidemiological Board, 25 May 1999. Subject: Armed Forces Epidemiological Board recommendations regarding chlamydia screening.
18. Office of the Chief of Naval Operations. OPNAV Instruction 6120.3, Preventive Health Assessment, 5 DEC 2001.
19. Riegodedios AJ, Ajene A, Malakooti MA, et al. Comparing diagnostic coding and laboratory results. *Emerging Infectious Diseases* 2005; 11: 1151-3.
20. Riegodedios AJ. Agreement between electronic clinical datasets

